CLAIM AMENDMENTS

This listing of claims will replace all prior versions, and listings, of claims in the application:

1. (Currently Amended) A method, comprising:

receiving multiple packet flows, each one of the multiple packet flows including a plurality of packets;

enqueuing a plurality of packet pointers for each of the multiple packet flows into multiple link lists, each one of the plurality of packet pointers designating one of the plurality of packets of each of the multiple packet flows; and

dequeuing the plurality of packet pointers for each of the multiple packet flows from each of the multiple link lists to transmit each of the plurality of packets along a corresponding outflow of each of the multiple packet flows,

wherein enqueuing the plurality of packet pointers for each of the multiple packet flows further comprises enqueuing each of the plurality of packet pointers into the multiple link lists according to the following relation,

$$PQ = (LQ \times N) + Qmult$$

wherein PQ represents a link list number of one of the multiple link lists, LQ represents a logical queue number corresponding to one of the multiple packet flows, N represents a number of the multiple link lists per each one of the multiple packet flows, and Qmult differentiates between each one of the multiple link lists of each of the multiple packet flows.

~~receiving a plurality of packets from an inflow of a single packet flow;~~

~~enqueuing a plurality of packet pointers into multiple link lists, each one of the plurality of packet pointers designating one of the plurality of packets from the single packet flow; and~~

~~dequeuing the plurality of packet pointers from the multiple link lists to transmit the plurality of packets along an outflow of the single packet flow.~~

2. (Currently Amended) The method of claim 1 wherein enqueuing the plurality of packet pointers for each of the multiple packet flows into the multiple link lists further comprises enqueuing the plurality of packet pointers for each of the multiple packet flows into the multiple link lists using a round robin enqueuing scheme between the multiple link lists.

3. (Currently Amended) The method of claim 2 wherein dequeuing the plurality of packet pointers for each of the multiple packet flows from each of the multiple link lists further comprises dequeuing the plurality of packet pointers for each of the multiple packet flows from the multiple link lists in a same order as enqueuing the plurality of packet pointers into the multiple link lists.

4. (Currently Amended) The method of claim 1 wherein the multiple link lists for each of the multiple packet flows comprise two link lists and wherein enqueuing the plurality of packet pointers into the multiple link lists for each of the multiple packet flows further comprises alternating enqueues of each of the plurality of packet pointers for each of the multiple packet flows between the two link lists.

5. (Currently Amended) The method of claim 4 wherein dequeuing the plurality of packet pointers for each of the multiple packet flows from the two link lists further comprises alternating dequeues of each of the plurality of packet pointers for each of the multiple packet flows from the two link lists in a same order as the alternating enqueues.

6. (Cancelled)

7. (Cancelled)

8. (Original) The method of claim 1 wherein the multiple link lists comprise multiple physical link lists having multiple link list elements, each link list element including one of the plurality of packet pointers and a next element pointer.

9. (Currently Amended) The method of claim 1 wherein each of the ~~single~~ multiple packet flows comprises a single data packet flow along a network path.

10. (Currently Amended) A method, comprising:

receiving multiple pluralities of packets from corresponding multiple packet inflows;

enqueuing each of the multiple pluralities of data packets from the corresponding multiple packet inflows into corresponding multiple physical queues; and

dequeuing each of the multiple pluralities of packets from the corresponding multiple physical queues to transmit each of the multiple pluralities of packets along corresponding packet outflows,

wherein enqueuing each of the multiple pluralities of data packets comprises enqueuing each of the multiple pluralities of packets into the corresponding multiple physical queues according to the following relation,

$$PQ = (LQ \times N) + Qmult$$

wherein PQ represents a physical queue number of one of the corresponding multiple physical queues, LQ represents a logical queue number corresponding to one of the multiple packet inflows, N represents a number of the corresponding multiple physical queues per each of the multiple packet inflows, and Qmult differentiates between each one of the multiple physical queues of each of the multiple packet inflows.

~~receiving a plurality of packets from a packet inflow;~~

~~enqueuing the plurality of packets from the packet inflow into multiple physical queues; and~~

~~dequeuing the plurality of packets from the multiple physical queues to transmit the plurality of packets along a packet outflow.~~

11. - 14. (Cancelled)

15. (Currently Amended) A machine-accessible medium that provides instructions that, if executed by a machine, will cause the machine to perform operations comprising:

enqueuing a plurality of packet pointers into multiple physical queues, the plurality of packet pointers [[to]] each point to a memory location temporarily having stored therein one of a corresponding plurality of packets, the corresponding plurality of packets received from a packet flow via a first network link; and

dequeuing the plurality of packet pointers from the multiple physical queues to transmit the plurality of packets onto a second network link[[.]],

wherein the packet pointers are enqueued into the multiple physical queues according to the following relation,

$$PQ = (LQ \times N) + Qmult$$

wherein PQ represents a physical queue identifier, LQ represents a logical queue identifier, N represents a number of the multiple physical queues assigned per logical queue, and Qmult differentiates between the multiple physical queues assigned to each logical queue.

16. (Original) The machine-accessible medium of claim 15 wherein enqueuing the plurality of packet pointers into the multiple physical queues comprises enqueuing the plurality of packet pointers into the multiple physical queues using a round robin enqueuing scheme between the multiple physical queues.

17. (Original) The machine-accessible medium of claim 16 wherein dequeuing the plurality of packet pointers from the multiple physical queues comprises dequeuing the plurality of packet pointers from the multiple physical queues using a round robin dequeuing scheme between the multiple physical queues.

18. (Original) The machine-accessible medium of claim 15 wherein the dequeuing of the plurality of packet pointers from the multiple physical queues is executed in a same order as the enqueuing of the plurality of packet pointers.

19. (Original) The machine-accessible medium of claim 15, further providing instructions that, if executed by the machine, will cause the machine to perform operations, comprising:

enqueuing the plurality of packet pointers into the multiple physical queues for each of multiple packet flows, each of the plurality of packet pointers to point to one of the plurality of memory locations temporarily having stored therein one of the plurality of packets received from one of the multiple packet flows; and

dequeuing the plurality of packet pointers from the multiple physical queues for each of the multiple packet flows to transmit the plurality of packets of each of the multiple packet flows.

20. (Original) The machine-accessible medium of claim 19 wherein the multiple packet flows are all transmitted along multiple network links.

21. (Original) The machine-accessible medium of claim 15 wherein the multiple physical queues comprise multiple link lists.

22. (Cancelled)

23. (Currently Amended) A router, comprising:

a first port to receive a plurality of packets ~~of a packet flow~~;

a memory unit to temporarily queue the plurality of packets ~~of the packet flow~~;

a queue manager to enqueue a plurality of packet pointers, each one of the plurality of packet pointers to point to one of the plurality of packets temporarily queued, the queue manager to enqueue the plurality of packet pointers into multiple link lists according to PQ = (LQ × N) + Qmult, wherein PQ represents a link list identifier, LQ represents a logical queue identifier of a packet flow, N represents a number of the multiple link lists assigned per logical queue, and Qmult differentiates between the multiple link lists assigned to each logical queue; and

a second port to transmit the plurality of packets thereon, each of the plurality of packets to be transmitted in response to the queue manager dequeuing one of the plurality of packet pointers.

24. (Original) The router of claim 23 wherein the queue manager is further to enqueue the plurality of packet pointers into the multiple link lists using a round robin enqueuing scheme between the multiple link lists.

25. (Original) The router of claim 24 wherein the queue manager is further to dequeue the plurality of packet pointers from the multiple link lists in a same order as enqueuing the plurality of packet pointers.

26. (Original) The router of claim 23 wherein the queue manager comprises hardware entity.

27. (Original) The router of claim 26 wherein the queue manager further comprises a software entity.

28. (Currently Amended) A system, comprising:

a plurality of optical routers, each of the plurality of optical routers comprising:

a first port to receive a plurality of packets of a packet flow;

a memory unit to temporarily queue the plurality of packets of the packet flow;

a queue manager to enqueue a plurality of packet pointers, each one of the plurality of packet pointers to point to one of the plurality of packets temporarily queued, the queue manager to enqueue the plurality of packet pointers into multiple physical queues according to PQ = (LQ × N) + Qmult, wherein PQ represents a physical queue identifier, LQ represents a logical queue identifier of a packet flow, N represents a number of the multiple physical queues assigned per logical queue, and Qmult differentiates between the multiple physical queues assigned to each logical queue; and

a second port to transmit the plurality of packets thereon, each of the plurality of packets to be transmitted in response to the queue manager dequeuing one of the plurality of packet pointers; and

a plurality of optical fibers to link the plurality of optical routers into a network, the first port and the second port of each of the plurality of routers each coupled to one of the plurality of optical fibers.

29. (Original) The system of claim 28 wherein the queue manager is further to enqueue the plurality of packet pointers into the multiple physical queues using a round robin enqueuing scheme between the multiple physical queues.

30. (Original) The system of claim 29 wherein the queue manager is further to dequeue the plurality of packet pointers from the multiple physical queues in a same order as enqueuing the plurality of packet pointers.